Foreword

How Forecasts Are Made

Most of the annuel streamflow in the Western United States originates as snowfall. This snowfall accumulates high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are viewed in conjunction with snowpack data to prepare runoff forecasts. This report presents a comprehensive picture of water supply outlook conditions for areas dependent upon surface runoff. It includes selected streamflow forecaste, summarized snowpack and precipitation data, reservoir storage data and narratives describing current conditions.

Streamflow forecasts are cooperatively generated by Soil Conservation Service and National Weather Service hydrologists. Forecasts become more accurate as more data affecting runoff becomes known. For this reason, forecasts ere issued that reflect three future precipitation conditions — Below Normal, Average, and Above Normal. These forecaets are termed reasonable minimum, most probeble, and reasonable maximum. Actual streamflow can be expected to fall between the lower end upper forecest values eight out of ten years.

Snowpack data are obtained by using a combination of manual and automated measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation, temperature, and other parameters are monitored on a daily basis and transmitted via radio telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

For More Information

Copies of Monthly Water Supply Outlook Reports and other reports may be obtained from the states listed below. Because of the limited space, snow survey meesurements are not published in monthly reports. An annual snow survey data summary is published by the Soil Conservation Service for each of the western states. Historicel snow survey data may be obtained at those same offices.

STATE	ADDRESS
Alaska	201 Eest 9th Ave., Suite 300, Anchorage, AK 99501-3687
Arizona	201 East Indianola, Suite 200, Phoenix, AZ 85012
Coloredo (New Mexico)	2490 West 26th Ave., Denver, CO 80211
Idaho	304 North 8th Street, Room 345, Boise, ID 83702
Montana	10 East Babcock, Room 443, Federal Building, Bozeman, MT 59715
Nevada	50 South Virginia Street, Third Floor, Reno, NV 89505
Oregon	1220 Southwest 3rd Ave., 16th Floor, Portlend, OR 97204
Utah	4402 Federal Building, 125 South State Street, Salt Lake City, UT 84147
Washington	360 U.S. Court House, Spokane, WA 99201
Wyoming	Federel Building, 100 East "B" Street, Casper, WY 82602

In addition to state reports, a Water Supply Outlook for the Western United States is published by the Soil Conservation Service end National Weather Service monthly, Januery through May. Reports may be obtained from the Soil Conservation Service, West National Technical Center, 511 Northwest Broadwey, Room 547, Portland, OR 97209.

Published by other agencies:

Water Supply Outlook Reports prepared by other agencies include: California — Snow Survey Branch, California Department of Water Resources, P.O. Box 388, Sacramento, CA 98502; British Columbia — The Ministry of Environment, Water Investigations Brench, Parliement Buildings, Victorie, British Columbia, V8V 1X5; Yukon Territory — Department of Indian and Northern Affairs, Northern Operations Branch, 200 Range Road, Whitehorse, Yukon Territory, Y1A 3V1; Alberta, Saskatchewan, and N.W.T. — The Water Survey of Canada, Inland Waters Brench, 110-12 Avenue S.W., Calgary, Alberte, T3C 1A6.

Montana
Water Supply Outlook

and

Federal – State – Private
Cooperative Snow Surveys

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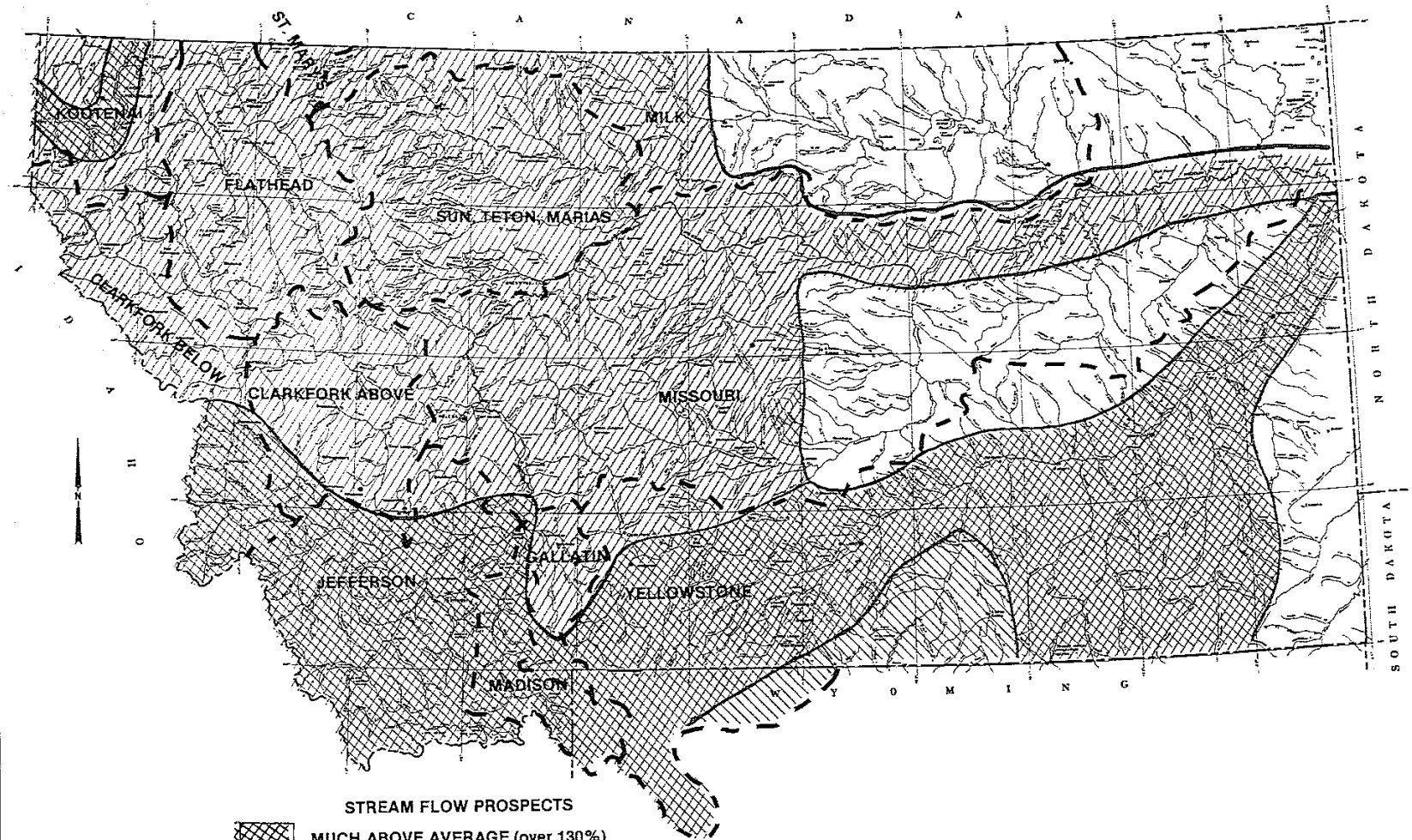
U.S. DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE



STREAMFLOW PROSPECTS FOR MONTANA

Spring and Summer Period

STREAM FLOW PROSPECTS

- MUCH ABOVE AVERAGE (over 130%)
- ABOVE AVERAGE (110-130%)
- NEAR AVERAGE (90-110%)
- BELOW AVERAGE (70-90%)
- MUCH BELOW AVERAGE (below 70%)
- NOT FORECAST

March 1, 1986

0 25 50 75 100 MI

0 50 100 150 KM

SOURCE:
Information provided by SCS Snow Survey Personnel.

JUNE 1985 4-R-39296

USDA SCS FORT WORTH, TEXAS 1986

GENERAL OUTLOOK

SUMMARY:

Snowpack conditions improved over most of the state during February. The southern half of Montana generally has average or a little above average snowpack. The northern half of the state generally has below average snowpack. Also, the Gallatin and parts of the Red Rock, Yellowstone and Musselshell drainages have below average snow cover. February precipitation was above average. Some rain that occurred in northwest Montana passed through the snowpack. Warm temperatures, rain and low elevation snowmelt combined to generate runoff in many areas. Most low elevation snowpack is now gone. Streamflows during the spring and summer months are forecast to be near to a little above average for southern drainages dropping to below average runoff over the remainder of the state.

SNOWPACK:

February was a good snowfall month. Most areas showed an increase of 10 to 20 percent in snowpack figures over those reported on February 1. The greatest increase was noted in the southern part of the state during the last 2 weeks of February. Most headwaters in southern Montana show near to above average snowpack. Exceptions are the Gallatin and parts of the Red Rock, Musselshell and Yellowstone drainages. Almost all areas in the northern half of the state have below average snowpack with many locations showing less snow than was reported last year at this time. Rain fell in the northern part of Montana near the end of February and passed through the snowpack. Warm temperatures during the last we of the month melted some low and mid-elevation snow and depleted snow from valley areas.

PRECIPITATION:

February precipitation was above average throughout all mountain ranges in Montana. Some locations recorded as much as two times their average February amounts. Usually precipitation at this time of year falls as snow even in the valley areas. This year, some of the precipitation occurred as rain even in the higher elevations of the northwestern part of th state. In many areas, the rain passed through the snowpack and generated early season runoff.

RESERVOIRS:

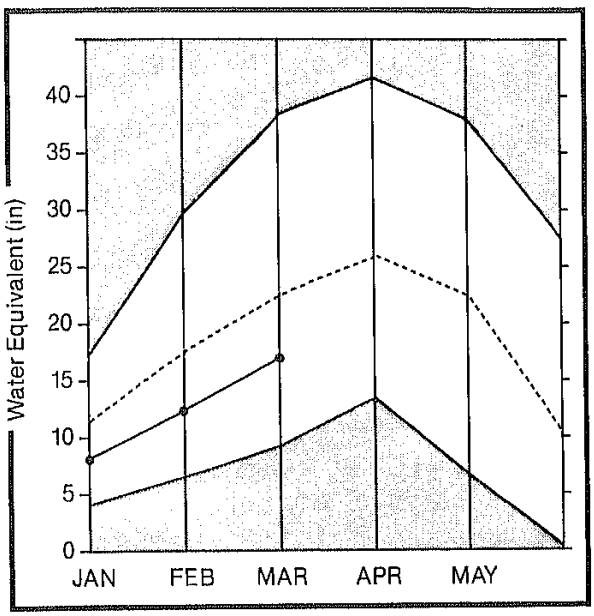
Nelson Reservoir in the Milk River drainage, most reservoirs in the Musselshell River drainage, Smith River Reservoir and Tongue River Reservoir had below average storage on the last day of February. All other irrigation reservoirs have storage levels near or above average. Most multipurpose or hydroelectric reservoirs have near average storage.

STREAMFLOW:

Streamflow forecasts are based on current snowpack and soil moisture conditions and near average precipitation for the remainder of the season. West of the Divide, most streams and rivers are forecast to have below average spring and summer runoff. The Bitterroot River drainage and adjacent Rock Creek are forecast to flow a little below average. Most streams in the Flathead and Clark Fork River drainages are expected to produce about 80 to 85 percent of average runoff. Smaller streams with lower elevation headwaters in the Kootenai and Clark Fork should have streamflows in the 70 to 80 percent of average range. East of the Divide, forecasts for the Missouri River headwaters vary from near average on the Jefferson, to above average on the Madison and below average on the Gallatin. Runoff from central Montana mountain ranges is expected to be near to a little below average. Streams flowing from the west into the Missouri River downstream from Canyon Ferry Reservoir and those in the St. Mary drainage are expected to produce only 75 to 85 percent of their average runoff. The Yellowstone, Boulder, Stillwater and Clarks Fork Rivers are forecast to be near average. Downstream, the Bighorn, Little Bighorn, Tongue and Powder Rivers are all forecast to have above average streamflows.

Kootenai Basin

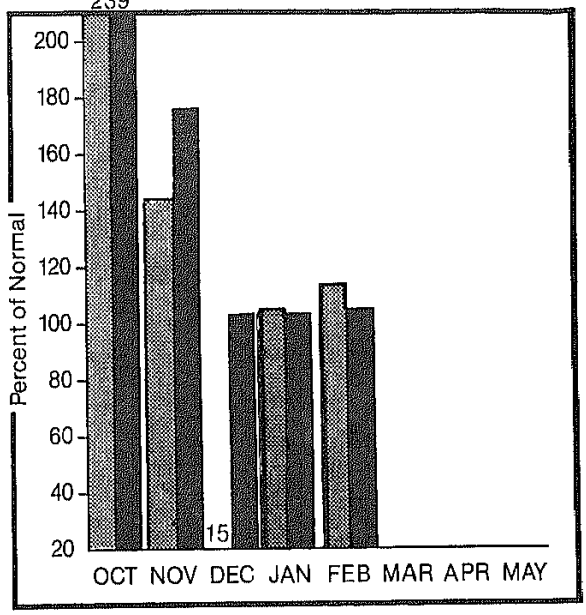
Mountain snowpack* (inches)



* Kootenai in Montana

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

The mountain snowpack improved slightly during the past month. February precipitation was a little above average but much of it fell as rainfall and passed through the snowpack. Also some snowmelt was noted at lower elevations. Snow conditions are a little better in Canada. There is less snow than last year on the watersheds. Spring and summer streamflows on the Kootenai River are expected to be a little below average. Smaller tributary streams in Montana are expected to have below average runoff.

For more information contact your local Soil Conservation Service office.

KOOTENAI RIVER BASIN in Montana

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
KOOTENAI RIVER blw Libby Dam *	APR-JUL	6020.0	5570.0	92	115	71				
	APR-SEP	7041.0	6520.0	92	115	71				
FISHER RIVER near Libby	APR-JUL	248.0	177.0	71	97	46				
	APR-SEP	264.0	189.0	71	98	45				
YAAK RIVER near Troy	APR-JUL	500.0	400.0	80	106	54				
	APR-SEP	523.0	425.0	81	107	55				
KOOTENAI RIVER at Leonia *	APR-JUL	7498.0	6810.0	90	112	70				
	APR-SEP	8602.0	7810.0	90	112	70				
	APR-JUN	6051.0	5423.0	89	111	69				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
LAKE KOOCANUSA	5748.0	2108.0	1885.0	1948.0

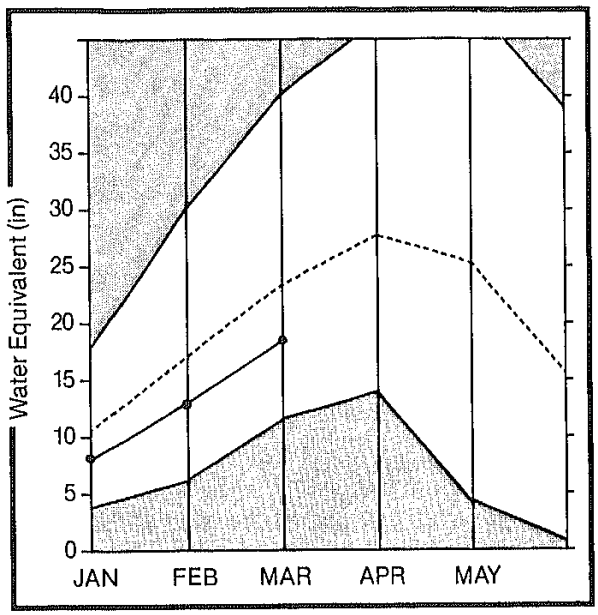
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
EAST KOOTENAI in B.C.	25	99	90
KOOTENAI in MONTANA	31	72	72
KOOTENAI ab BONNERS FERRY	56	80	78

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Flathead Basin

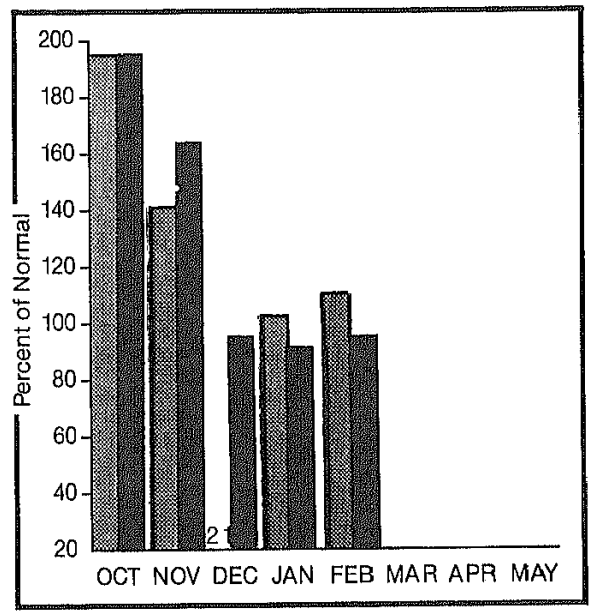
Mountain snowpack* (inches)



* Flathead

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack has improved slightly during February even though some of the moisture came as rain and passed through the snowpack. Presently, there is less snow than was measured last year on this date. Total precipitation for February was above average. Some runoff has occurred from snowmelt caused by recent warm temperatures and rain. Spring and summer streamflows are predicted to be below average on all drainages.

For more information contact your local Soil Conservation Service office.

FLATHEAD RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
NF FLATHEAD near Columbia Falls	APR-JUL	1732.0	1380.0	79	96	64				
	APR-SEP	1913.0	1530.0	79	96	64				
	APR-JUN	1471.0	1175.0	79	96	64				
MF FLATHEAD near West Glacier	APR-JUL	1713.0	1400.0	86	102	70				
	APR-SEP	1869.0	1610.0	86	102	70				
	APR-JUN	1453.0	1270.0	87	103	71				
SF FLATHEAD near Columbia Falls *	APR-JUL	2142.0	1860.0	86	110	64				
	APR-SEP	2278.0	1980.0	86	107	67				
	APR-JUN	1886.0	1640.0	86	110	64				
FLATHEAD at Columbia Falls *	ARP-JUL	5721.0	4840.0	84	101	69				
	APR-SEP	6208.0	5260.0	84	101	69				
	APR-JUN	4921.0	4180.0	84	101	69				
SWAN RIVER near Big Fork	APR-JUL	604.0	530.0	87	104	72				
	APR-SEP	689.0	600.0	87	103	71				
FLATHEAD RIVER near Polson *	APR-JUL	6712.0	5800.0	86	102	70				
	APR-SEP	7278.0	6290.0	86	102	70				
	APR-JUN	5759.0	4955.0	86	102	70				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
CAMAS (4)	45.2	20.5	17.0	21.0
MISSION VALLEY (8)	100.0	44.3	36.4	38.1
HUNGRY HORSE	3451.0	2281.0	2007.0	2213.0
FLATHEAD LAKE	1791.0	812.5	746.8	934.1

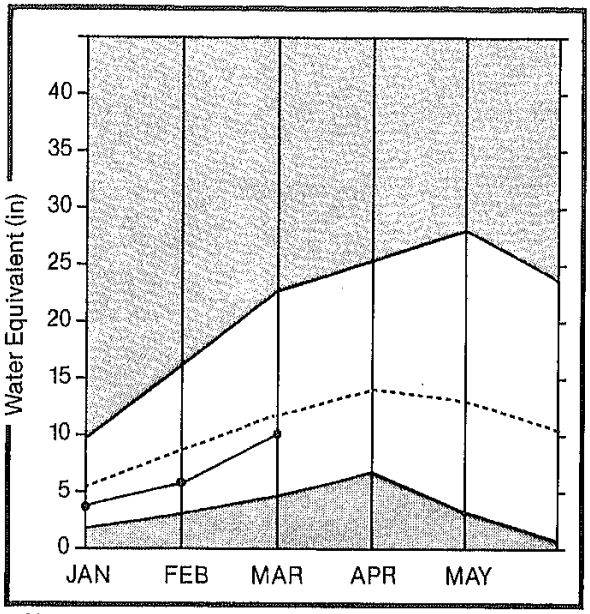
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
NORTH FORK FLATHEAD	15	74	73
MIDDLE FORK FLATHEAD	11	81	79
SOUTH FORK FLATHEAD	13	81	82
STILLWATER-WHITEFISH	9	79	74
SWAN	11	85	85
LITTLE BITTERROOT	9	74	79
FLATHEAD	48	79	79

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Clark Fork Basin above Missoula

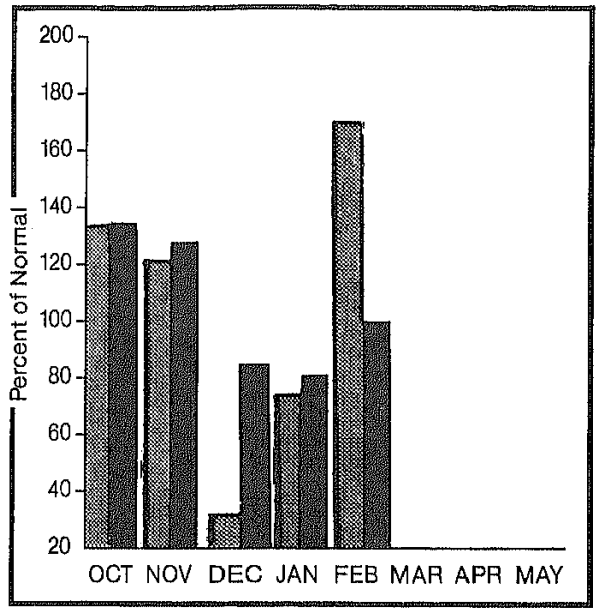
Mountain snowpack* (inches)



* Clark Fork above Missoula

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack conditions improved somewhat during Februar but they are still below average over most of the drainage. February precipitation was well above average. Some runoff was generated from low elevation snowmelt and rainfall during the last week in February. Runoff during spring and summer is forecast to be below average.

For more information contact your local Soil Conservation Service office.

CLARK FORK RIVER BASIN above Missoula

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MOULTON RESERVOIR Inflow (NC)x	APR-JUL	263.0	210.0	79	106	54				
	APR-JUN	237.0	190.0	80	105	55				
WARM SPRINGS CR at Meyers Dam x	APR-JUL	37.8	33.3	88	114	61				
	APR-SEP	46.8	41.2	88	113	62				
FLINT CREEK near Southern Cross x	APR-JUL	15.4	12.3	79	117	45				
	APR-SEP	18.3	14.5	79	115	44				
FLINT CREEK below Boulder Creek x	APR-JUL	59.9	50.0	83	120	47				
	APR-SEP	75.8	63.4	83	120	47				
LOWER WILLOW CR RES Inflow x	APR-JUL	14.9	10.5	70	107	34				
	APR-SEP	15.7	11.0	70	108	35				
N. FK. ROCK CRK near Philipsburg	APR-JUL	70.5	62.5	88	115	62				
	APR-SEP	78.2	69.2	88	115	63				
NEVADA CREEK near Finn	APR-JUL	21.3	16.2	76	113	42				
	APR-SEP	23.0	17.5	76	113	39				
BLACKFOOT RIVER near Bonner	APR-JUL	904.0	725.0	00	96	64				
	APR-SEP	999.0	820.0	82	98	66				
	APR-JUN	782.0	637.0	01	97	65				
CLARK FORK RIVER above Milltown x	APR-JUL	708.0	600.0	84	117	53				
	APR-SEP	816.0	695.0	85	117	53				
	APR-JUN	597.0	510.0	85	117	53				
CLARK FORK RIVER above Missoula	APR-JUL	1612.0	1340.0	83	109	57				
	APR-SEP	1815.0	1520.0	83	110	58				
	APR-JUN	1379.0	1150.0	83	109	57				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
GEORGETOWN LAKE	31.0	24.9	26.2	25.2
LOWER WILLOW CREEK	4.9	2.8	0.3	1.6
NEVADA CREEK	12.6	9.6	---	4.8

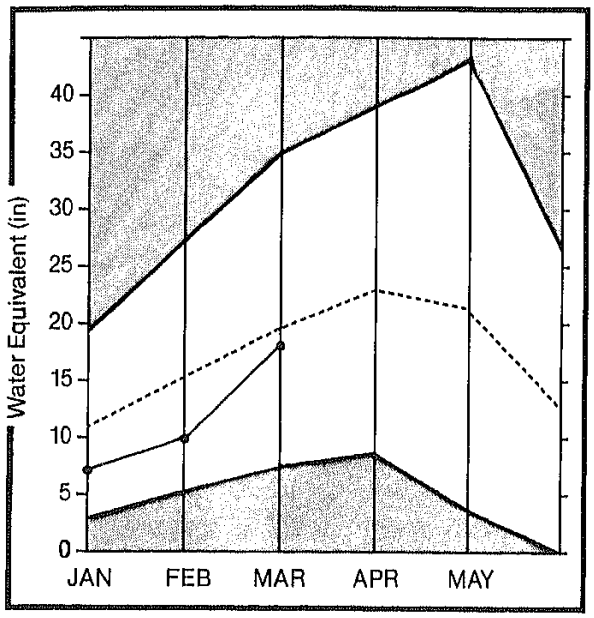
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK ab BLACKFOOT	43	111	91
BLACKFOOT	22	90	83
CLARK FORK above MISSOULA	59	103	86

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Clark Fork Basin below Missoula

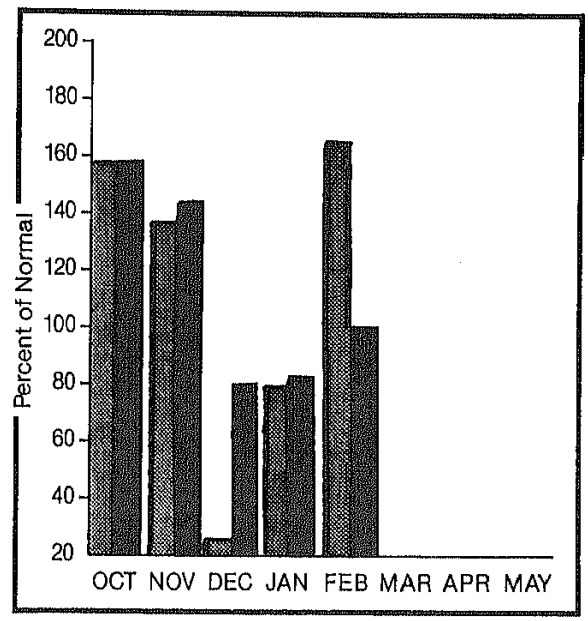
Mountain snowpack* (inches)



*Bitterroot

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

The Bitterroot snowpack improved significantly during February and is now a little below average. The lower Clark Fork also improved but still has below average snow cover. Precipitation during February was well above average. There has been some runoff from lower elevations because of snowmelt and rain. April through September runoff is forecast at near to a little below average on the Bitterroot streams. Streams flowing into the lower Clark Fork are expected to have below average runoff.

For more information contact your local Soil Conservation Service office.

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
CLARK FORK RIVER above Missoula	APR-JUL	1612.0	1340.0	83	109	57				
	APR-SEP	1815.0	1520.0	83	110	58				
	APR-JUN	1379.0	1150.0	83	109	57				
W.F. BITTERROOT RIVER nr Conner *	APR-JUL	164.0	150.0	91	110	65				
	APR-SEP	178.0	165.0	92	119	67				
BITTERROOT RIVER near Darby	APR-JUL	532.0	500.0	93	120	68				
	APR-SEP	580.0	540.0	93	119	67				
	APR-JUN	464.0	445.0	95	122	70				
SKALKAHO CREEK near Hamilton	APR-JUL	48.7	46.3	95	111	80				
	APR-SEP	56.0	52.8	94	111	79				
BURNT FORK CR nr Stevensville *	APR-JUL	32.2	30.2	93	121	68				
	APR-SEP	37.4	34.5	92	118	67				
BITTERROOT RIVER at Missoula *	APR-JUL	1364.0	1240.0	89	116	64				
	APR-SEP	1504.0	1350.0	89	116	64				
	APR-JUN	1191.0	1100.0	92	118	66				
CLARK FORK RIVER below Missoula	APR-JUL	2996.0	2580.0	86	104	68				
	APR-SEP	3319.0	2870.0	86	104	68				
	APR-JUN	2570.0	2225.0	86	105	69				
CLARK FORK RIVER at St. Regis	APR-JUL	3928.0	3420.0	87	112	62				
	APR-SEP	4411.0	3800.0	86	111	61				
	APR-JUN	3428.0	2965.0	86	111	61				
CLARK FORK RIVER near Plains *	APR-JUL	11071.0	9830.0	88	100	70				
	APR-SEP	12153.0	10300.0	84	104	66				
	APR-JUN	9459.0	8120.0	85	105	67				
THOMPSON RIVER near Thompson Falls	APR-JUL	233.0	185.0	79	103	55				
	APR-SEP	261.0	210.0	80	105	56				
PROSPECT CREEK at Thompson Falls	APR-JUL	132.0	110.0	83	109	50				
	APR-SEP	142.0	120.0	84	111	58				
CLARK FORK at Whitehorse Rapids *	APR-JUL	12351.0	10400.0	84	103	65				
	APR-SEP	13575.0	11400.0	83	103	65				
	APR-JUN	10570.0	8915.0	84	103	65				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
PAINTED ROCKS LAKE		NO REPORT		
NOXON RAPIDS	335.0	162.8	316.5	295.1
CONO	34.9	16.1	8.8	12.6

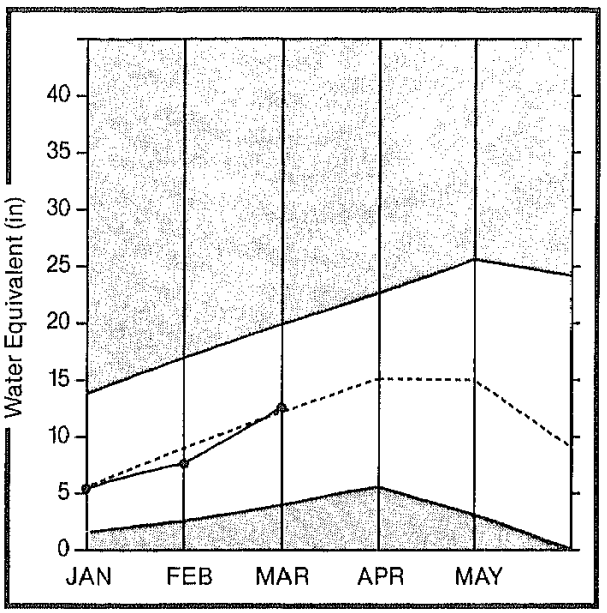
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
CLARK FORK above MISSOULA	59	103	00
BITTERROOT	19	104	91
LWR CLARK FK blw MISSOULA	19	76	80
BITTERROOT & LWR C.F.	37	86	85
CLARK FORK TOTAL	91	92	86
FLATHEAD	48	79	79
PEND O'REILLE	134	87	83

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Jefferson Basin

Mountain snowpack* (inches)

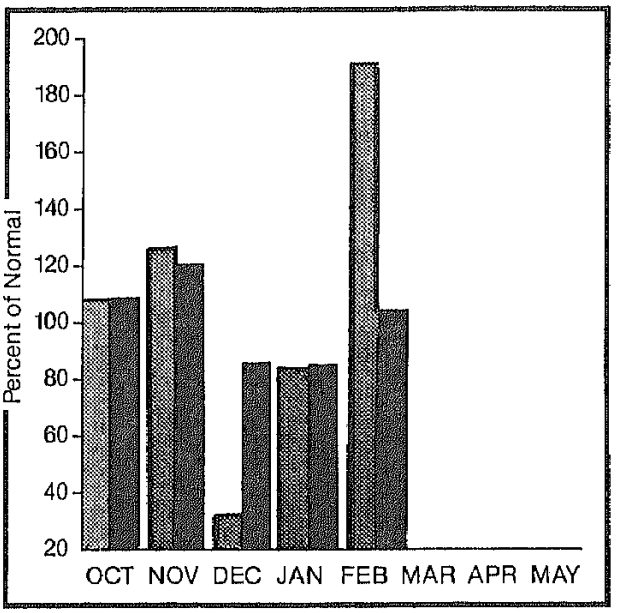


* Jefferson

Maximum — Average

Minimum — Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation — Year to date precipitation

WATER SUPPLY OUTLOOK

Most drainages have average or above average snowpack. One exception is part of the Red Rock where snow cover is still below average. February precipitation was nearly twice as much as average at most locations. Spring and summer streamflows are forecast to be near to a little below average for the upper Red Rock River and average to a little above average on other drainages.

For more information contact your local Soil Conservation Service office.

JEFFERSON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
RED ROCK RIVER near Monida x	APR-JUL	96.0	90.0	93	128	59				
	APR-SEP	103.0	96.4	93	127	59				
BEAVERHEAD RIVER near Grant x	APR-JUL	137.0	134.0	97	132	64				
	APR-SEP	158.0	149.0	94	128	60				
BEAVERHEAD RIVER at Barratts x	APR-JUL	180.0	175.0	97	131	63				
	APR-SEP	209.0	196.0	93	128	60				
RUBY RIVER near Alder	APR-JUL	85.0	81.5	95	128	64				
	APR-SEP	101.0	96.2	95	128	63				
BIG HOLE RIVER near Melrose	APR-JUL	698.0	685.0	98	120	68				
	APR-SEP	760.0	739.0	97	127	67				
WILLOW CREEK near Harrison	APR-JUL	17.9	18.3	102	140	67				
	APR-SEP	20.0	20.2	100	135	65				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
LIMA	84.0	25.6	28.7	36.2
CLARK CANYON	257.0	145.3	147.9	141.2
RUBY RIVER	38.8	29.7	27.8	26.7

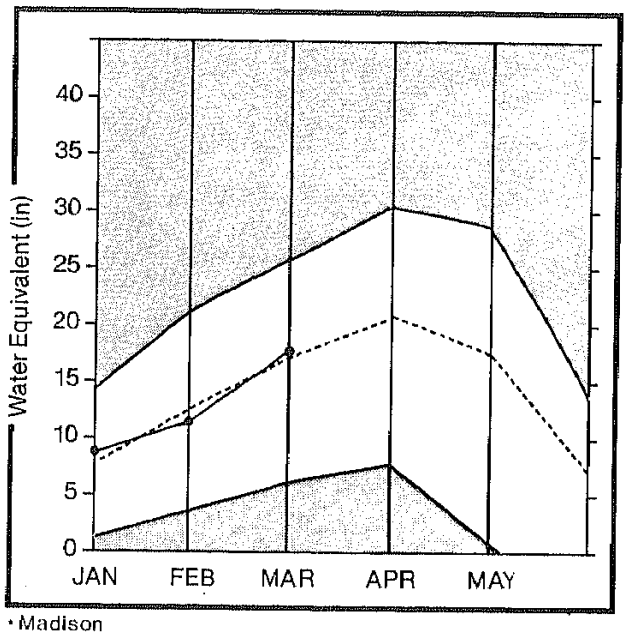
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
BEAVERHEAD	32	128	107
RUBY	14	118	96
BIGHOLE	27	116	101
BOULDER	15	109	95
JEFFERSON	69	119	102

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Madison Basin

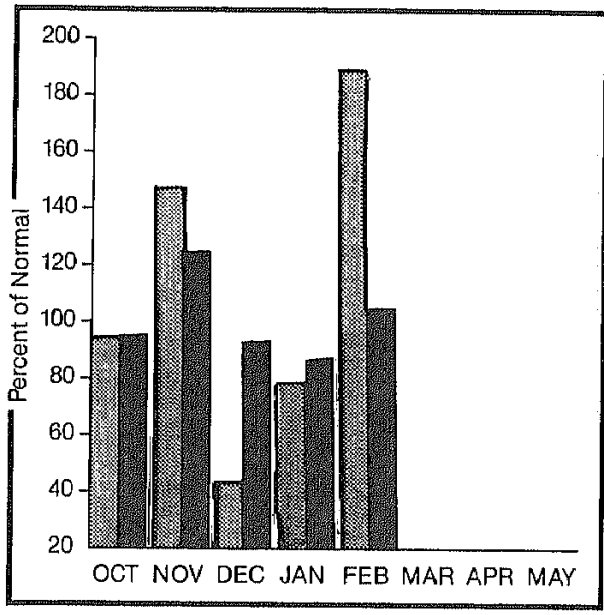
Mountain snowpack* (inches)



*Madison

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack in the headwaters near Yellowstone National Park is above average. Downstream the snow cover is about average in the Gravelly Range and below average in the Madison Range. Precipitation during February was almost twice as much as average. Streamflows on the upper Madison are forecast to be above average and decreasing to near average in the lower drainage.

For more information contact your local Soil Conservation Service office.

MADISON RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MADISON RIVER near Grayling x	APR-JUL	388.0	432.0	111	129	93				
	APR-SEP	496.0	545.0	109	120	92				
MADISON RIVER near McAllister x	APR-JUL	672.0	670.0	99	118	82				
	APR-SEP	848.0	832.0	98	116	80				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
ENNIS LAKE	41.0	30.1	32.5	35.7
HEBGEN LAKE	378.0	277.1	305.2	224.6

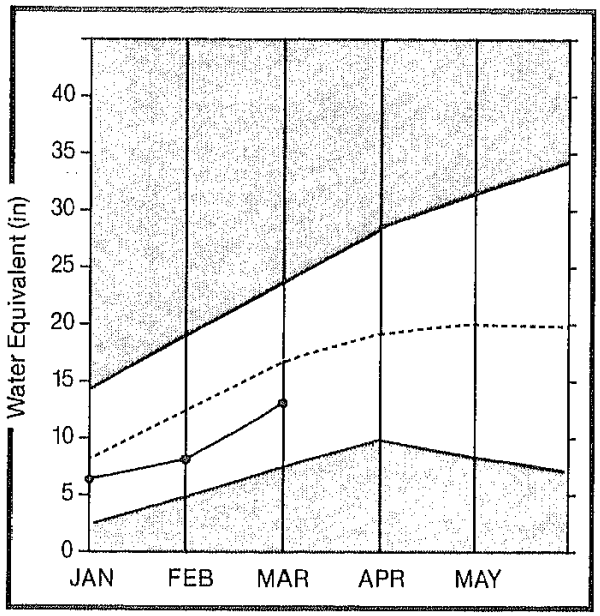
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	THIS YEAR AS % OF AVERAGE
MADISON above HEBGEN	17	120	115
LOWER MADISON	20	117	94
MADISON	37	123	105

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period

Gallatin Basin

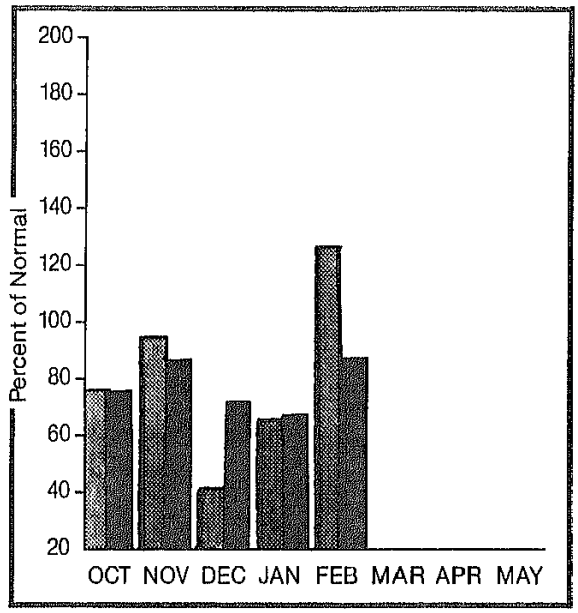
Mountain snowpack* (inches)



*Gallatin

Maximum
Minimum
Average
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpacks have improved a little during February but remain well below average in the Bridger Range and on the north end of the Gallatin Range. This area also has less snow than was measured a year ago. Snowpacks are a little better in the southern part of the headwaters but are still below average. February precipitation was a little above average. Spring and summer streamflows are forecast to be below average from all drainages.

For more information contact your local Soil Conservation Service office.

GALLATIN RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
GALLATIN RIVER near Gateway	APR-JUL	464.0	385.0	82	101	65				
	APR-SEP	545.0	445.0	81	100	64				
E & W FK. HYALITE CR. nr Bozeman *	APR-JUL	25.0	20.4	81	96	64				
	APR-SEP	29.0	23.5	81	97	66				
HYALITE CREEK near Bozeman *	APR-JUL	39.0	31.6	81	100	62				
	APR-SEP	45.0	36.3	80	100	60				
GALLATIN RIVER at Logan	APR-JUL	523.0	400.0	76	102	50				
	APR-SEP	611.0	470.0	76	103	51				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
MIDDLE CREEK	8.0	6.3	3.8	3.6

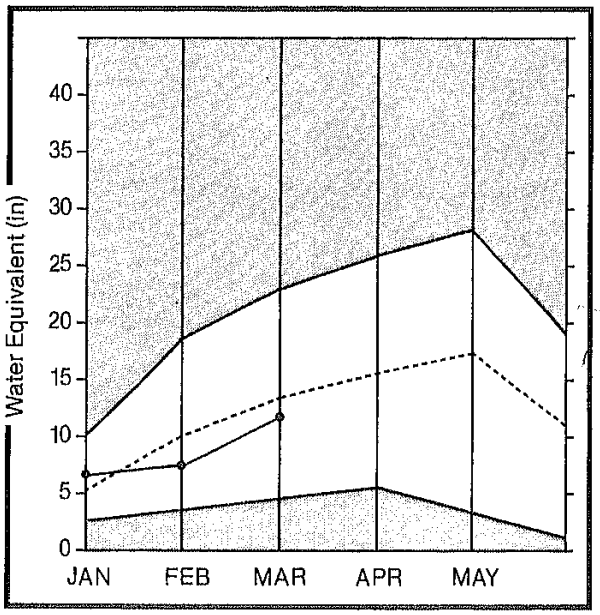
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
UPPER GALLATIN	14	111	87
EAST GALLATIN	13	92	69
GALLATIN	24	104	80

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Missouri Basin

Mountain snowpack* (inches)



*Missouri Toston to Fort Peck

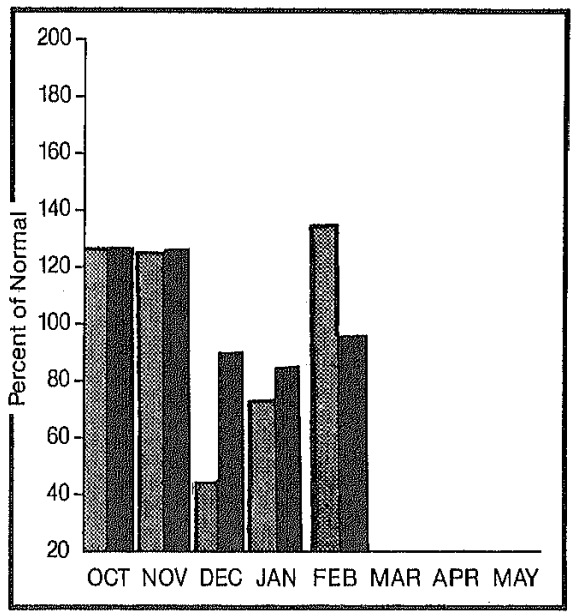
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack conditions improved during February. Mountain snowpacks are generally near average in the southern part of the drainage but decrease on downstream tributaries. Precipitation during February was above average. Some runoff occurred in late February from low elevation snowmelt and rainfall. Streamflows during the spring and summer period are forecast to vary from near average in the headwaters and tributaries in the southern areas to below average from downstream tributaries.

For more information contact your local Soil Conservation Service office.

MISSOURI RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
MISSOURI RIVER at Toston x	APR-JUL	2196.0	1990.0	90	135	61				
	APR-SEP	2545.0	2335.0	91	136	62				
SHEEP CREEK nr White Sulphur Spgs.	APR-JUL	19.0	19.0	100	142	58				
	APR-SEP	22.0	21.9	99	141	59				
BELT CREEK near Monarch	APR-JUL	123.0	118.0	95	132	60				
	APR-SEP	134.0	128.0	95	131	60				
MISSOURI RIVER at Fort Benton x	APR-JUL	3468.0	2995.0	86	140	56				
	APR-SEP	3980.0	3535.0	88	140	56				
MISSOURI RIVER at Virgelle x	APR-JUL	4030.0	3432.0	85	142	54				
	APR-SEP	4570.0	4015.0	87	142	54				
MISSOURI RIVER near Landusky x	APR-JUL	4383.0	3805.0	86	146	54				
	APR-SEP	4980.0	4455.0	89	146	54				
M.F. MUSSELSHELL near Delpine	APR-JUL	5.4	5.0	92	130	56				
	APR-SEP	6.4	5.9	92	125	47				
S.F. MUSSELSHELL above Martinsdale	APR-JUL	59.0	52.0	80	129	47				
	APR-SEP	63.0	54.2	86	125	46				
MISSOURI RIVER below Fort Peck x	APR-JUL	4429.0	3900.0	88	147	51				
	APR-SEP	4961.0	4365.0	87	147	51				
LAKE SAKAKAWEA Inflow x	APR-JUL	12239.0	12000.0	98	145	61				
	APR-SEP	12775.0	12500.0	97	145	61				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
CANYON FERRY LAKE	2043.0	1482.0	1379.0	1561.0
HELENA VALLEY	10.4	3.3	3.6	5.1
LAKE HELENA	10.4	10.9	10.9	9.9
HAUSER & HELENA	61.9	63.0	63.0	60.1
HOLTER LAKE	81.9	78.1	75.4	63.6
SMITH RIVER	10.6	5.5	8.4	7.0
NEWLAN CREEK	12.4	9.7	9.7	9.2
BAIR	7.0	2.0	0.5	4.7
MARTINSDALE	23.1	5.1	5.7	9.5
DEADMAN'S BASIN	72.2	34.8	---	46.3
FORT PECK LAKE	18.9	13.8	15.6	14.8

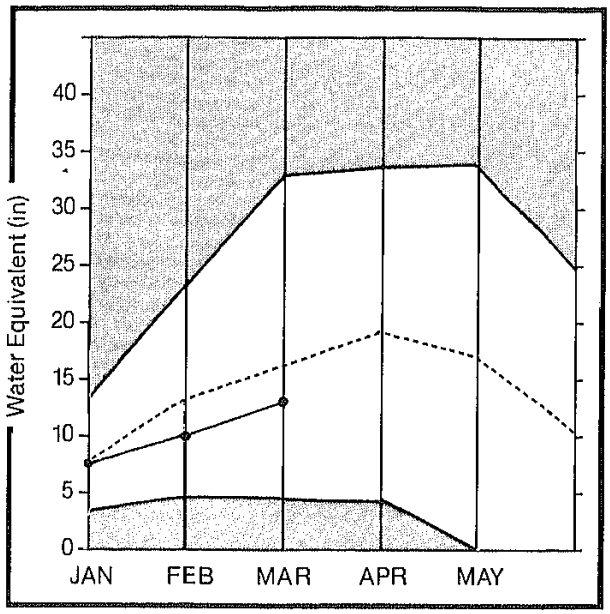
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.0	THIS YEAR AS % OF LAST YR.	AVERAGE
MISSOURI HEADWATERS	114	117	99
WEST SIDE MISSOURI	11	101	95
SMITH-BELT	11	105	97
MISSOURI MAINSTEM	22	103	96
SUN-TETON-MARIAS	17	84	82
JUDITH-MUSSELSHELL	17	97	92
MISSOURI above FORT PECK	155	109	96
MILK HEADWATERS	4	60	63
BEAR PAW	6	26	37
MILK RIVER	10	50	58
MISSOURI in MONTANA	163	107	95
MISSOURI blw YELLOWSTONE	264	124	105

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Sun,Teton and Marias Basins

Mountain snowpack* (inches)



* Sun-Teton-Marias

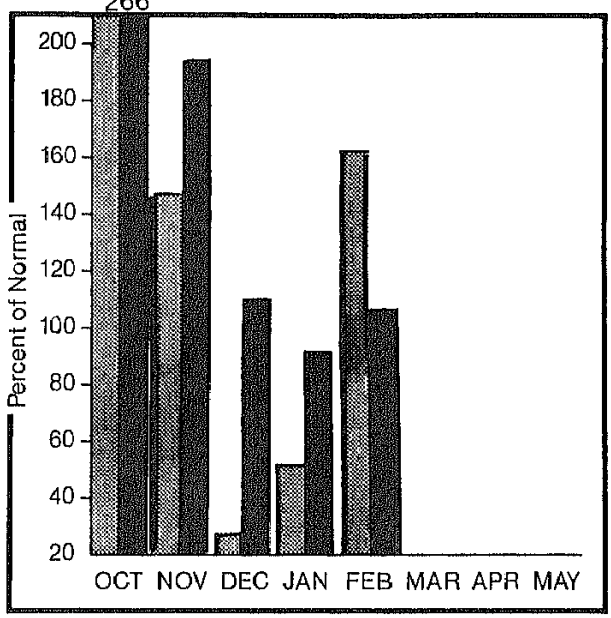
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpack improved during February but is still below average in most areas. Also, there is less snow now than was measured a year ago. High elevation snowpacks are a little better than lower and mid-elevation snowpacks. Precipitation during February was well above average. Runoff increased near the end of February from low elevation snowmelt and rainfall. Spring and summer streamflows are forecast to be below average from all drainages.

For more information contact your local Soil Conservation Service office.

SUN-TETON-MARIAS RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	MEAS. MAX. (% AVE.)	MEAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
SUN RIVER at Gibson Dam x	APR-JUL	522.0	438.0	83	108	60				
	APR-SEP	570.0	479.0	84	100	60				
TWO MEDICINE CREEK near Browning x	APR-JUL	235.0	108.0	00	116	44				
	APR-SEP	248.0	198.0	79	114	46				
BADGER CREEK near Browning	APR-JUL	113.0	96.0	84	121	49				
	APR-SEP	130.0	112.0	06	120	52				
SWIFT RESERVOIR Inflow nr Dupuyer	APR-JUL	74.7	64.5	06	122	51				
	APR-SEP	86.7	74.5	85	120	52				
CUT BANK CREEK at Cut Bank	APR-JUL	108.0	82.0	75	112	40				
	APR-SEP	114.0	86.5	75	110	42				
MARIAS RIVER near Shelby	APR-JUL	518.0	414.0	79	117	43				
	APR-SEP	542.0	433.0	79	115	44				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
GIBSON	99.1	60.1	50.9	43.9
PISHKUN	32.0	18.1	18.5	17.8
WILLOW CREEK	32.2	22.5	12.6	20.1
LOWER TWO MEDICINE LAKE		NO REPORT		
FOUR HORNS LAKE		NO REPORT		
SWIFT	30.0	25.0	9.2	15.2
LAKE FRANCES	112.0	66.9	23.2	70.1
LAKE ELWELL (TIBER)	1347.0	774.2	668.2	542.1

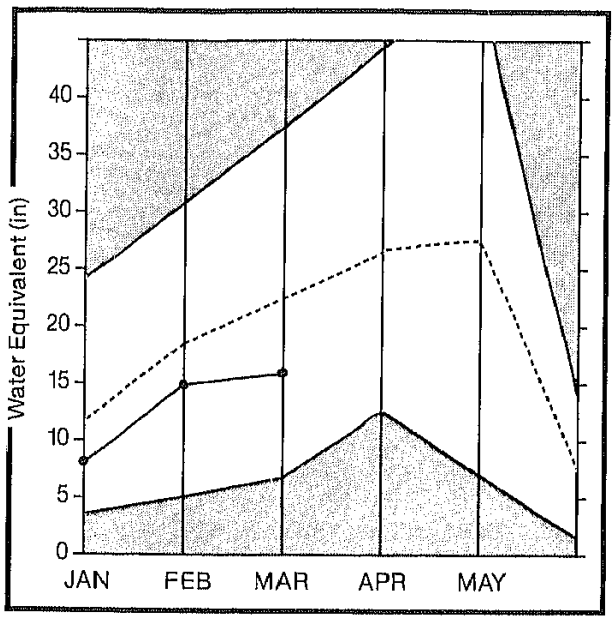
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
SUN-TETON	12	83	83
MARIAS	6	84	02
SUN-TETON-MARIAS	17	84	02

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-00 period.

St. Mary and Milk Basins

Mountain snowpack* (inches)



* St. Mary

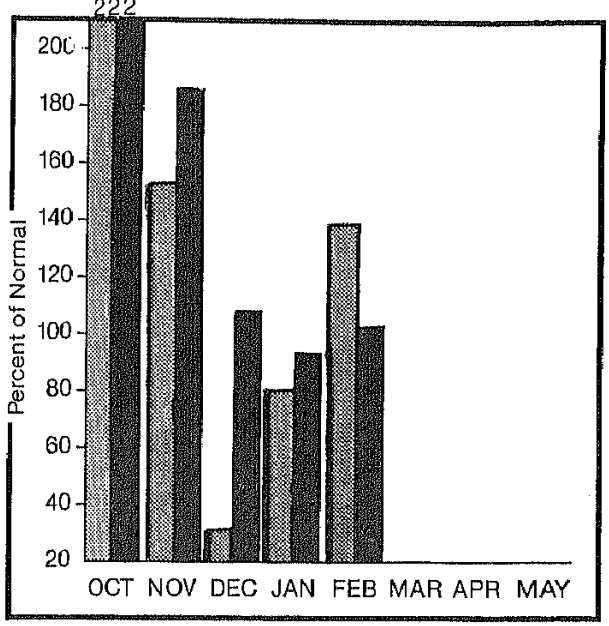
Maximum

Minimum

Average

Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

WATER SUPPLY OUTLOOK:

Warm temperatures near the end of February have depleted snowpacks in the Milk River drainage. Snow in the headwaters of the Milk and St. Mary Rivers is well below average even though February precipitation was well above average. Some of the February moisture fell as rain and passed through the snowpack and some melt was noted in lower elevation snowpacks. Streamflows are forecast to be well below average during the spring and summer months.

For more information contact your local Soil Conservation Service office.

ST. MARY and MILK RIVER BASINS

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	20 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
SWIFTCURRENT CREEK at Sherburne x	APR-JUL	112.0	86.6	77	99	55				
	APR-SEP	128.0	98.4	76	99	55				
ST. MARY RIVER near Babb x	APR-JUL	416.0	308.0	74	90	58				
	APR-SEP	487.0	366.0	75	91	59				
MILK RIVER at Eastern Crossing x	MAR-SEP	279.0	260.0	93	129	81				
MILK RIVER at Eastern Crossing	MAR-SEP	109.0	81.7	74	111	64				

RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	xx USEABLE STORAGE xx THIS YEAR	LAST YEAR	AVE.
LAKE SHERBURNE	64.3	40.9	33.3	21.9
FRESNO	127.0	59.4	7.6	58.5
BEAVER CREEK	3.5	3.3	0.9	1.7
NELSON	66.8	33.2	12.3	38.7

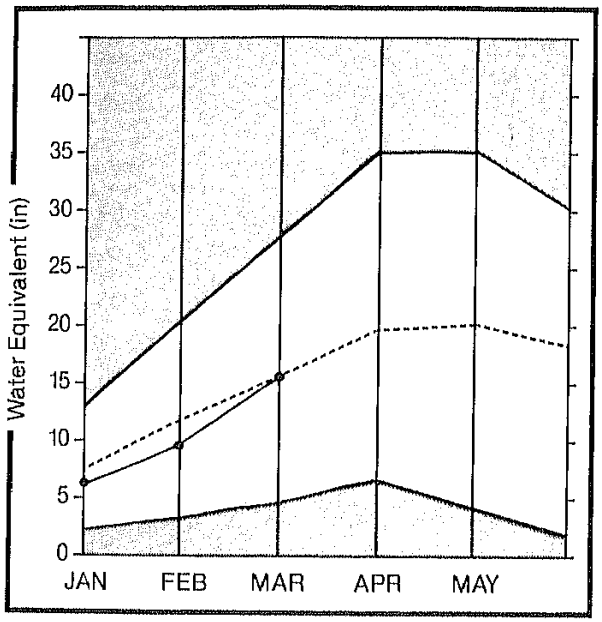
WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
MILK HEADWATERS	4	60	63
BEAR PAW	6	26	37
MILK RIVER	10	50	50
ST. MARY	11	69	71
ST. MARY and MILK	17	62	67
BOW RIVER in ALBERTA	10	141	122
OLDMAN RIVER in ALBERTA	8	80	91

xCorrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.

Yellowstone Basin

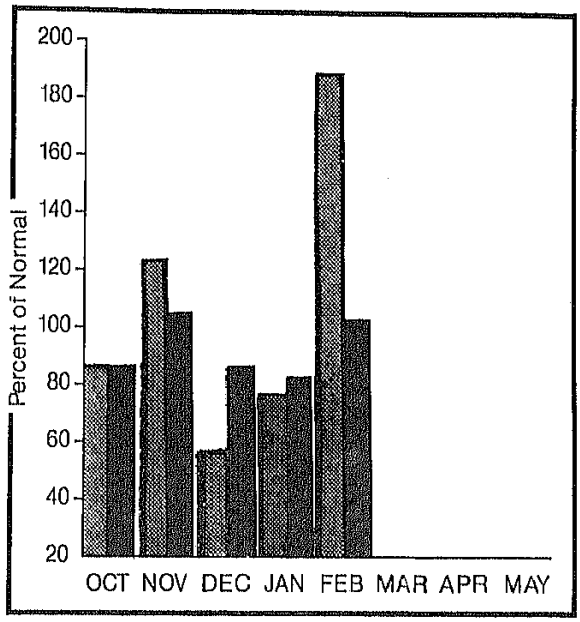
Mountain snowpack* (inches)



* Yellowstone above Big Horn

Maximum
Average
Minimum
Current

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation
Year to date precipitation

WATER SUPPLY OUTLOOK:

Snowpacks vary from above average in the Yellowstone headwaters to below average in the Bridger and Crazy Mountains. The Tongue, Powder and Bighorn drainages in Wyoming have above to well above average snow. February precipitation was nearly double the average. Spring and summer runoff is forecast above average for tributaries starting in or near Wyoming. Tributaries originating in the Crazy and Bridger Mountains are forecast to have below average streamflows.

For more information contact your local Soil Conservation Service office.

YELLOWSTONE RIVER BASIN

STREAMFLOW FORECASTS

FORECAST POINT	FORECAST PERIOD	30 YR. AVE. (1000AF)	MOST PROBABLE (1000AF)	MOST PROBABLE (% AVE.)	REAS. MAX. (% AVE.)	REAS. MIN. (% AVE.)	PEAK FLOW (CFS)	PEAK DATE	LOW FLOW (CFS)	LOW DATE
YELLOWSTONE at Lake Outlet	APR-SEP	826.0	900.0	108	125	93				
YELLOWSTONE at Corwin Springs	APR-JUL	1686.0	1643.0	97	113	81				
	APR-SEP	2027.0	1960.0	96	113	81				
YELLOWSTONE near Livingston	APR-JUL	1969.0	1870.0	94	111	79				
	APR-SEP	2379.0	2250.0	94	111	79				
BOULDER RIVER at Big Timber	APR-JUL	366.0	370.0	101	125	77				
	APR-SEP	398.0	393.0	98	123	75				
STILLWATER RIVER nr Absarokee *	APR-JUL	528.0	530.0	100	132	68				
	APR-SEP	632.0	632.0	100	132	68				
CLARKS FORK RIVER near Belfry	APR-JUL	563.0	620.0	110	140	80				
	APR-SEP	628.0	705.0	112	142	82				
COOKEY RESERVOIR Inflow	APR-JUL	49.5	48.0	96	129	65				
	APR-SEP	60.5	58.4	96	129	64				
YELLOWSTONE RIVER at Billings	APR-JUL	3833.0	3910.0	102	129	84				
	APR-SEP	4516.0	4460.0	98	126	81				
BIGHORN RIVER near St. Xavier *	APR-JUL	1794.0	2315.0	129	168	102				
	APR-SEP	1976.0	2555.0	129	168	102				
LITTLE BIGHORN RIVER near Hardin	APR-JUL	162.0	195.0	120	167	65				
	APR-SEP	182.0	218.0	119	167	64				
TONGUE RIVER near Decker	APR-JUL	244.0	250.0	102	136	68				
	APR-SEP	269.0	265.0	98	132	65				
YELLOWSTONE RIVER at Miles City *	APR-JUL	5906.0	6500.0	110	144	86				
	APR-SEP	6787.0	7355.0	108	142	84				
POWDER RIVER at Moorehead	APR-JUL	243.0	267.0	109	161	44				
	APR-SEP	263.0	283.0	107	159	42				
YELLOWSTONE RIVER near Sidney *	APR-JUL	6544.0	7200.0	110	146	83				
	APR-SEP	7518.0	8130.0	108	144	81				

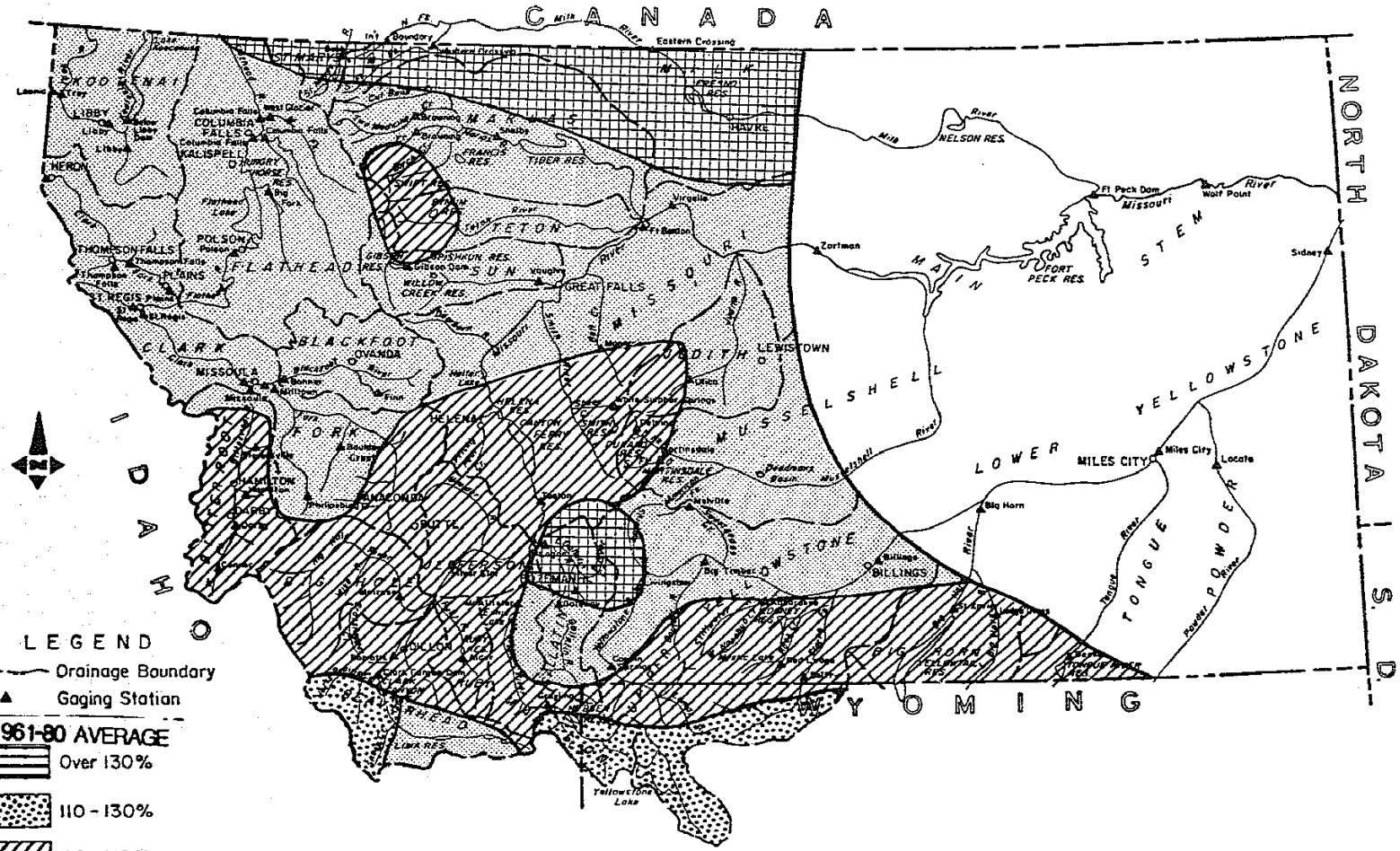
RESERVOIR STORAGE (1000AF)

RESERVOIR	USEABLE CAPACITY	** USEABLE STORAGE ** THIS YEAR	LAST YEAR	AVE.
MYSTIC LAKE	21.0	2.2	1.4	7.3
COOKEY	27.4	18.4	19.2	14.6
BIGHORN LAKE	1356.0	733.5	854.9	590.4
TONGUE RIVER	68.0	24.6	10.2	34.4

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES AVE.D	THIS YEAR AS % OF LAST YR.	AVERAGE
YELLOWSTONE ab LIVINGSTON	25	140	110
SHIELDS	10	101	72
BOULDER-STILLWATER	7	122	95
CLARK'S FORK-ROCK CREEK	21	145	111
YELLOWSTONE above BIGHORN	49	128	100
LITTLE BIGHORN	5	138	109
WIND RIVER (Wyoming)	27	231	171
BIGHORN RIVER (Wyoming)	34	171	131
BIGHORN BASIN (Total)	57	184	140
TONGUE RIVER (Wyoming)	15	139	117
POWDER RIVER (Wyoming)	15	171	117
YELLOWSTONE RIVER	117	153	117

*Corrected for upstream diversions or changes in reservoir storage.
Average is for 1961-80 period.



MONTANA

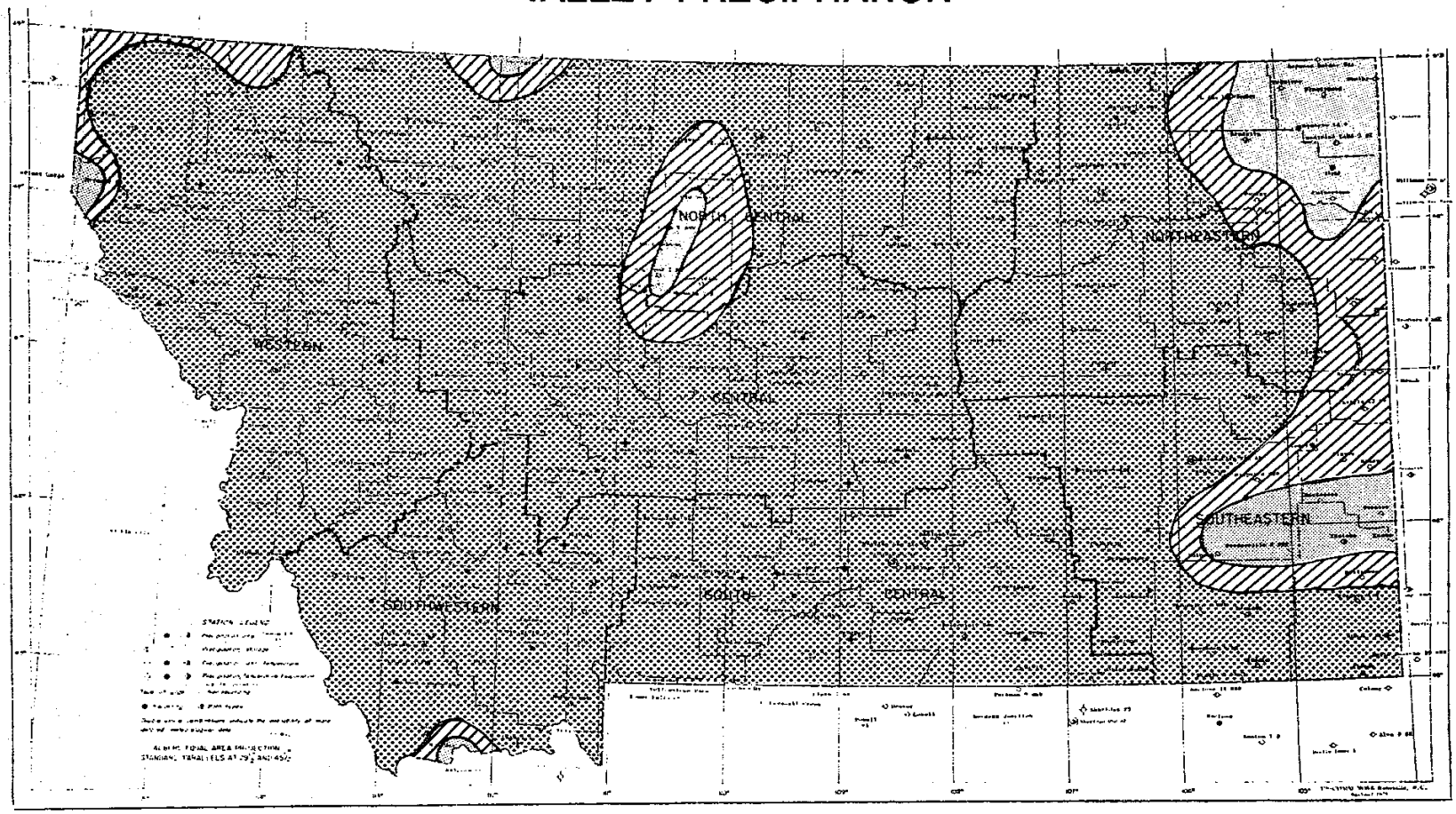
MOUNTAIN SNOW WATER EQUIVALENT

50 0 50 100

SCALE IN MILES

March 1, 1986

VALLEY PRECIPITATION



Over 130%

110–130%

90–110%

FEBRUARY 1986

Source: NWS
Great Falls, MT

The Following Organizations Cooperate With The Soil Conservation Service In Snow Survey Work

Canadian

Department of the Environment
- Atmospheric Environment Service
- Water Management Service

British Columbia Ministry of Environment
- Inventory and Engineering Branch, Hydrology Section

Alberta Environment
- Technical Services Division

Federal

U.S. Department of Agriculture
- Forest Service

U.S. Department of the Army
- Corps of Engineers

U.S. Department of Commerce
- NOAA, National Weather Service
- National Environmental Satellite Service

U.S. Department of the Interior
- Bureau of Indian Affairs
- Fish and Wildlife Service
- Geological Survey
- National Park Service
- Bureau of Reclamation

U.S. Department of Energy
- Bonneville Power Administration

State

Montana Conservation Districts
Montana Department of Fish, Wildlife, and Parks
Montana Department of Natural Resources and Conservation
Montana Department of State Lands
Montana State University - Agricultural Experiment Station
University of Montana - School of Forestry

Private

Big Sky of Montana
Butte Water Company
Flathead Valley Community College
Montana Power Company
Pondera County Canal & Reservoir Company

Other organizations and individuals furnish information for the snow survey reports. Their cooperation is gratefully acknowledged.